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ABSTRACT

Tinto's conceptual schema of college dropout forms the theoretical framework for the development of a model of university student dropout intention. This study validated Tinto's model in two different departments within a single university. Analyses were conducted on a sample of 684 college freshmen in the Education and Economics Department. A Program Evaluation Questionnaire (PEQ) was developed and given to all students at two universities. The response rate was 55 and 72 percent, respectively. PEQ is composed of 260 items forming 44 variables, measured on five-point scales, semantic differentials, and dichotomous categories. The model variables included: (1) background variables (school achievement); (2) commitments (goal and institutional); (3) expectations vs. reality (realization or frustration of study expectation); (4) academic integration (grade performance, intellectual development, study problems, motivating qualities of subject matter, relevance of subject matter); (5) social integration (interaction with peer groups); and (6) criteria (satisfaction with studies, dropout intention). Results generally supported the construct and predictive validity of the revised and extended model. However, disaggregated data indicated differences in influence patterns. The basic difference across departments concerned motives for professional choice, choice of major, and study expectations. (Author/PN)

DIFFERENTIAL VALIDATION OF A PATH ANALYTIC MODEL OF UNIVERSITY DROPOUT

by

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Abstract

This study validated Tinto's model of college dropout in two different departments within a single university. Analyses were conducted on a sample of 684 freshmen in the Education & Economics Department. The results generally supported the construct and preditive validity of the revised and extended model.

But differences were found in the patterns of influence when the data were disaggregated by Department. The basic difference across Department concerned motives for professional choice, for choice of major, and study expectations.

In Education this motives played a stronger role in the process of revising those choices than they did in Economics where frustration of study expectations were more important for students' intent to dropout.

Differential Validation of a Path Analytic Model of University Dropout

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Theoretical framework

Most of the studies dealing with conditions of college and university dropout are correlational. Moreover they lack of theoretical considerations. The work of Spady (1970, 1971) and of Tinto (1975) form the only exceptions to this rule by providing models of student dropout.
In the present study Tinto's conceptual schema of college dropout forms the theoretical framework for the development of a model of university student dropout intention.
The model of Tinto recently has been validated in quite a number of studies, mainly conducted by Terenzini and Pascarella (1977, 1978, 1980) and Pascarella and Terenzini (1979, 1980). The results of these studies basically confirm the model in its essential aspects, although there remain open questions with regard to the relative weight of its parts and to the sequence of the variables included in the model. The schema includes background variables, commitment variables, academic and social integration variables, and dropout. The path analytic model developed in this study is differing from Tinto's model in that it includes student dropout intention rather than the student's final dropout decision. The intention to drop out has been shown to be the best predictor of dropout (Bean, 1980, 1982). Furthermore the schema includes additional variables: realization versus frustration of study expectations as an intermediate variable, and satisfaction with studies as an intervening variable, preceeding dropout intention. Thus the model forms a revised version, and above that it is a reduced model. In a former study ten out of originally 23 variables were eliminated because of their weak effects upon the dependent variable (Winteler 1984).

Purpose of the study

In the present study a revised and reduced model of university dropout is cross-validated by applying it to different samples of the same population of students. We examine if the model applies not only to universities as a whole, but also to different departments (Education and Economics) within a single university. Students make up their decisions about dropout or persistence with respect to their major field of study, and this is a matter of departmental conditions of teaching and learning rather than of institutional conditions.

Munro (1981) tested Tinto's model in a multi-institutional sample, but her analysis did not disaggregate by institutional type.

Pascarella & Chapman (1983) extended the test of the model to a multi-institutional validation, finding that social integration played a stronger role at 4-year residential institutions, while academic integration was more important at commuter institutions. But their analysis did not disaggregate by department.

In the study mentioned above the author could find no differences with regard to the results between the two residential universities included; but there were differences among departments within the universities. We assume that kind and degree of the conditions of student satisfaction and of their dropout tendency may substantially differ between departments within the same university. We expect that differences between department will turn out with respect to social integration, academic integration, and to the degree to which study anticipations are met by experienced reality.

Method

A Program Evaluation Questionnaire (PEQ) was developed and given to all students at two universities. The response rate amounted to 55% and to 72%, respectively. In this study the sample of students is compiled of freshmen only (size of the sample: n = 684 male students).

The PEQ is composed of 260 items forming 44 variables, measured on five-point scales, semantic differentials, and dichotomous categories. All factors and variables included in the model to be tested are taken from the PEQ. The variables included in the reduced version of the model of conditions of student dropout tendency are as follows: Background variables (school achievement); Commitments 1 (goal commitment, institutional commitment); Expectations vs. reality (realization or frustration of study expectation); Academic integration (grade performance, intellectual development, study problems, motivating qualities of subject matter, relevance of subject matter); Social integration (interaction with peer group); Commitments 2 (goal commitment, institutional commitment); Criteria (satisfaction with studies, dropout intention).

Definition of the Variables

BACKGROUND VARIABLES

School achievement: grade performance in 6 majors.

Example: mathematics.

COMMITMENTS (I)

Goal commitment

Study intention: degree of past intention to study (2 items).

Example: it was a must for me to study.

Institutional commitment

Academic education vs. officer profession: predominant motivation underlying the vocational choice (3 items).

Example: chance to study.

EXPECTATION VS. REALITY

Study expectations met by experience: degree of realization of study expectations (3 items).

Example: standards were higher/lower than expected.

ACADEMIC INTEGRATION

Grade performance: GPA (1 item).

Intellectual development

Problems of study: degree of problems of learning and studying (4 items).

Example: problems to follow in lectures and exercises.

Motivating qualities of subject matter: subjective perception of study contents as (intrinsically) motivating (7 items).

Example: exciting ---- boring.

Relevance: relevance of subject matter for the demands of the future job (2 items).

SOCIAL INTEGRATION

Interaction with peer group

Social interaction: problems of social interaction with peers (9 items).

Example: I have the feeling to be an outsider.

COMMITMENTS (II)

Goal commitment

Student vs. officer: Preference for the life as a student or as an officer (2 items).

Example: I am more interested in the profession as an officer than in my studies.

Institutional commitment

Vocational choice: would the student choose the same professional career again? (2 items).

Example: I would choose the same career again.

CRITERIA

Satisfaction with studies: degree of satisfaction with major areas and with studies in general (6 items).

Example: I have had much delight when studying my major.

Dropout intention: intention of leaving (3 items).

Example: I often think of dropping out.

Data analysis was performed by using the program LVPLS (Latent Variables Path Analysis with Partial Least Squares Estimation), developed by Lohmoeller (1981). This program renders an optimal prediction accuracy.
A path model with latent variables is a combination of factor model and path model. In the factor model the relations between manifest (measured, observed) variables and latent (unmeasured, construct) variables are formulated as a linear equation system. The parameters of the model are estimated by the partial least squares method. Diverse fit indices are used to test the degree of congruence between model assumptions and the belonging empirical data set, i. e. Beta weights, inner and outer residual covariances, redundancy coefficient, communality coefficient.

Results and conclusions

The cross-validation procedure followed the strategy of moderate replication, favored by Bentler (1980). The resulting data justify the model modifications thus supporting the validity of the final model (Figure 1).
The comparison between the resulting values for the Department of Education and the Department of Economics shows that the model is applicable to the chosen level, although there are to be found different effects between the departments with respect to the importance of distinct factors (motives of professional choice, study expectations, revision of choice of studies) to student tendency. (Figures 2,3).
Interesting variations are indicated when the data are disaggregated by department. For example in the Department of Economics there are additional direct effects running from GPA ($B_{11,12} = -.20$) and from vocational choice ($B_{11,12} = -.21$) to the dependent variable study satisfaction.
When observing the total effects, the impact of the factor : academic studies vs. officer profession, upon study satisfaction is much more stronger in the Education Department ($B_{3,12} = -.35$) then in the Economics Department ($B_{3,12} = -.13$).
Intent to dropout is directly influenced by (low) grades in the Education Department only. In this Department preference for officer profession makes students more likely to dropout.

The additional variable 'realization of study expectations' seems to be an important determinant of the students' subjective evaluation of the indicators of academic and social integration. Its influence upon the criteria is indirect, through those variables.

Goal commitment and institutional commitment are equally important determinants of academic integration and of the criteria. Academic integration seems to be more important than social integration, the former being more directed towards goal commitment, the latter directed towards institutional commitment. Especially the motivating qualities of subject matter determine the variance of both criteria variables, whereas grade performance shows but an indirect and weak effect upon the dependent variable.

The chosen model not only proves to be able to explain important conditions of student dropout intention, but it also shows predictive validity. An amount of 67% and 60% of the total variance of the criteria is explained, respectively. The effects of the most important variables upon the criteria is powerfull, too ($.20 < B < .40$). The presumable consequences (effects) of certain established or changed conditions (causes) can be derived from the model, thus allowing to take remedial measures before the final dropout decision is settled. These measures especially consider the kind of commitments, study expectations, academic integration, and study satisfaction.

Certainly, the study has limitations. First of all intent to dropout does not mean that a final dropout decision will be settled. Intent to dropout only accounts for 25% of the total variance of dropout. The generalizability of the results is limited, although the sample response rate is rather high. But the validity of the measures developed to cover Tinto's construct is unclear. Also the operational definition of the dependent variable includes withdrawal and turnover. It remains unclear, if the findings would apply to university dropout only.

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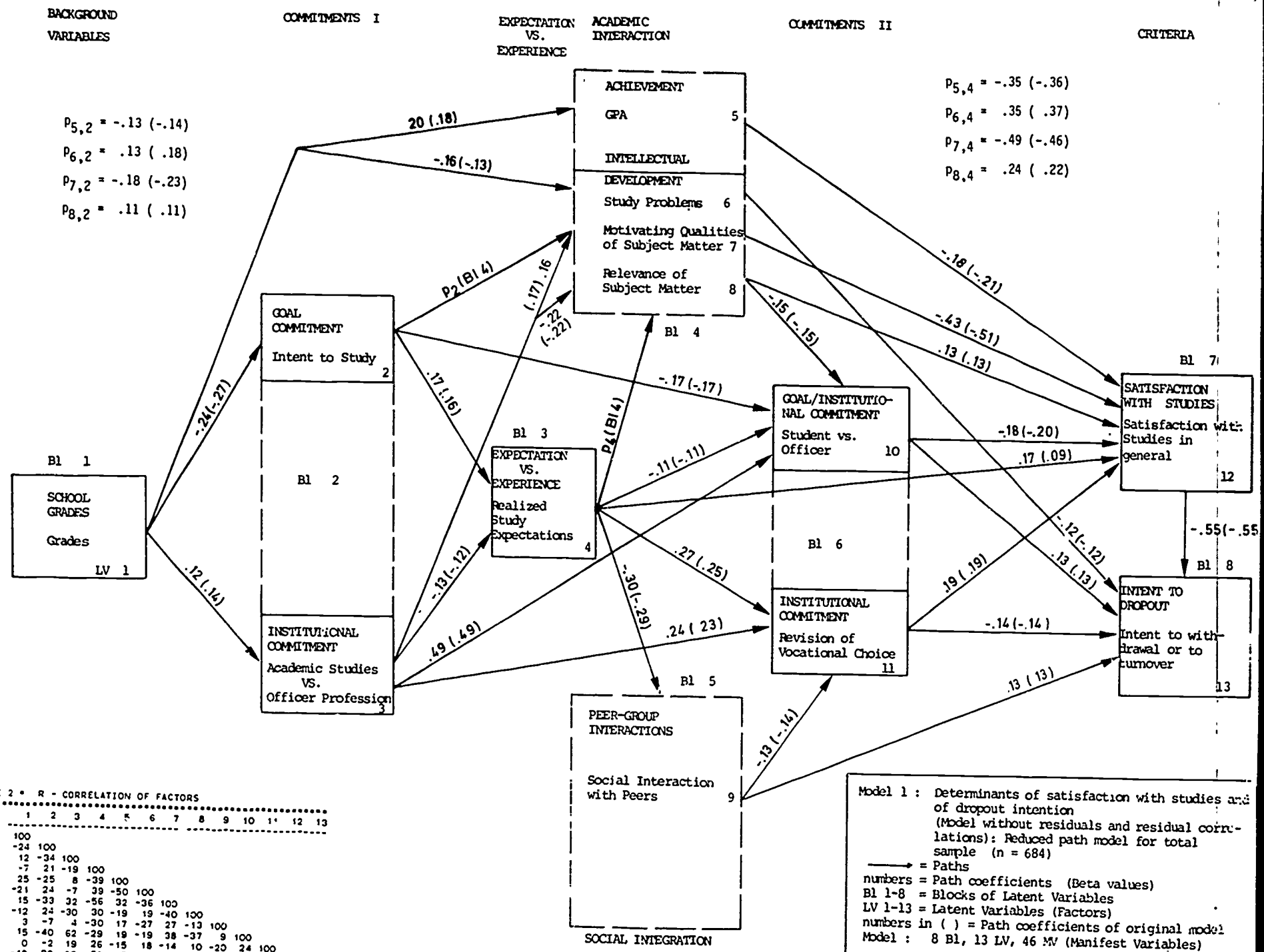
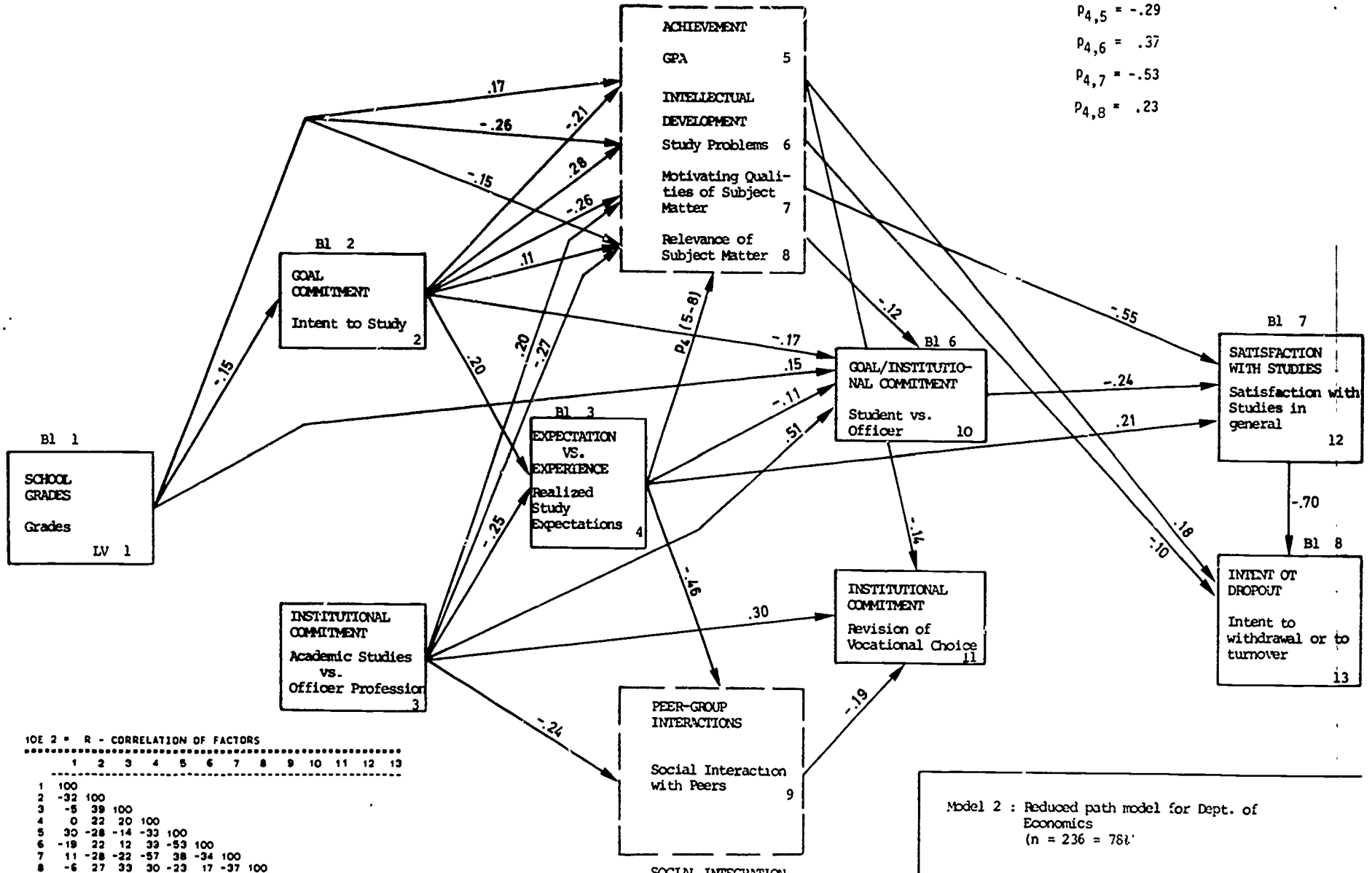


10E 2 * R - CORRELATION OF FACTORS

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	100												
2	-24	100											
3	12	-34	100										
4	-7	21	-19	100									
5	25	-25	8	-39	100								
6	-21	24	-7	39	-50	100							
7	15	-33	32	-56	32	-36	100						
8	-12	24	-30	30	-19	19	-40	100					
9	3	-7	4	-30	17	-27	27	-13	100				
10	15	-40	62	-29	19	-19	38	-37	9	100			
11	0	-2	19	26	-15	18	-14	10	-20	24	100		
12	-18	33	-35	62	-47	44	-73	47	-31	-44	26	100	
13	17	-30	28	-50	45	-45	53	-37	37	37	-30	-74	100

Model 1 : Determinants of satisfaction with studies and of dropout intention (Model without residuals and residual correlations): Reduced path model for total sample (n = 684)

→ = Paths
numbers = Path coefficients (Beta values)
Bl 1-8 = Blocks of Latent Variables
LV 1-13 = Latent Variables (Factors)
numbers in ( ) = Path coefficients of original model
Model : 8 Bl, 13 LV, 46 MV (Manifest Variables)



$P_{4,5} = -.29$

$P_{4,6} = .37$

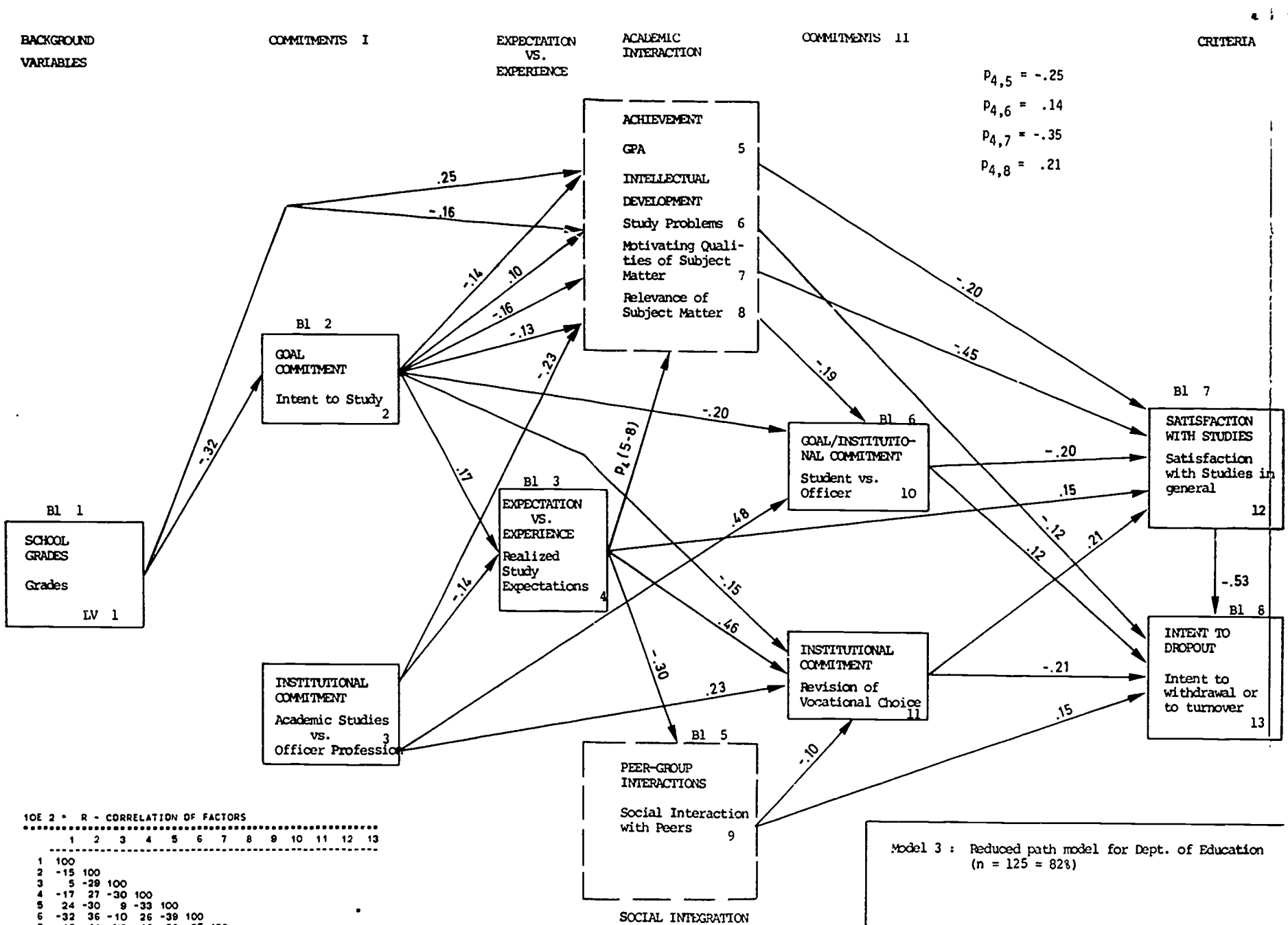
$P_{4,7} = -.53$

$P_{4,8} = .23$

10E 2 * R - CORRELATION OF FACTORS

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	100												
2	-32	100											
3	-5	39	100										
4	0	22	20	100									
5	30	-28	-14	-33	100								
6	-19	22	12	33	-53	100							
7	11	-28	-22	-57	38	-34	100						
8	-6	27	33	30	-23	17	-37	100					
9	4	-1	-10	-30	25	-29	28	-6	100				
10	11	-44	-63	-21	22	-17	24	-40	4	100			
11	4	-14	-18	41	-11	21	-26	12	-21	28	100		
12	-6	28	32	60	-48	44	-71	43	-32	-32	36	100	
13	11	-22	-25	-56	48	-46	57	-35	40	26	-42	-74	100

Model 2 : Reduced path model for Dept. of Economics
(n = 236 = 78%)



10E 2 * R - CORRELATION OF FACTORS

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	100												
2	-15	100											
3	5	-29	100										
4	-17	27	-30	100									
5	24	-30	9	-33	100								
6	-32	36	-10	26	-39	100							
7	13	-41	38	-48	38	-35	100						
8	-21	27	-38	35	-26	29	-47	100					
9	8	-14	-10	-38	19	-31	28	-11	100				
10	25	-41	65	-39	20	-28	45	-43	3	100			
11	-3	5	29	10	-18	15	1	-9	-28	35	100		
12	-25	44	-39	57	-40	34	-76	48	-26	-57	0	100	
13	22	-44	31	-50	49	-41	58	-38	37	46	-9	-80	100

Model 3 : Reduced path model for Dept. of Education (n = 125 = 82%)